UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/655,269	09/05/2000	Parviz Khosrowyar	KHO820/99482	8035

24118 7590 07/31/2003

HEAD, JOHNSON & KACHIGIAN
228 W 17TH PLACE
TULSA, OK 74119

EXAMINER
KUHAR, ANTHONY J

ART UNIT	PAPER NUMBER
1754	

DATE MAILED: 07/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/655,269	Applicant(s) KHOSROWYAR, PARVIZ
	Examiner Anthony J Kuhar	Art Unit 1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) 11-24 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-10 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-10, drawn to a method, classified in class 423, subclass 245.3.

II. Claims 11-24, drawn to an apparatus, classified in class 422, subclass 182.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus of Group II can be used to perform a different process than that of Group I, namely to condense an effluent not coming from a reboiler.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mark G. Kachigian on 7/18/2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-10. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-24 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 2.20, 3.41, 4.65, and all reference signs pertaining to figure 5. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The abstract of the disclosure is objected to because the abstract should be no more than 150 words. Correction is required. See MPEP § 608.01(b).

Claim Objections

Claim 1 is objected to because of the following informalities: in step d, "said effluents" should be –said re-vaporized effluents-. Appropriate correction is required.

In claims 2 and 5, the word in parenthesis is superfluous and should be removed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 5-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi '981 in view of Miles '523.

In column 2, lines 25-63 of Choi '981, glycol absorbent having absorbed hydrocarbons are passed to a reboiler. The vapors from the reboiler pass through a still having a condensor, where the vapors are partially condensed. Vapors coming from the still are passed to another condensor where heavier hydrocarbons and water are condensed, which are then collected in reservoir 26. Non –condensable vapors are then passed to a firetube inside the reboiler. Column 1, line 64 teaches that benzene, toluene, and xylene comprise much of the hydrocarbons. The glycol is preheated before passing into the reboiler. Choi '981 does not disclose placing a vaporizer to vaporize residual liquid in the vapors coming from the condensor and still.

However, Miles '523 teaches in a similar process where contaminants and water are vaporized in a reboiler to subsequently be sent to an incinerator, directing the contaminants and water from the reboiler to a superheater (see column 4, lines 28-34). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to place a superheater

(vaporizer) after the condensor and still of Choi '981 because Miles'523 teaches that the superheater promotes oxidation and complete combustion of the vaporized mixture.

Although specific glycol compounds such as DEG, TEG, ethylene glycol, tetraethylene glycol, or glycerin are not taught by Choi '981, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose one of these absorbents for optimization of absorption properties and since they are commonly used in this process.

Choi '981 teaches Figure 1 using the heat duty gained by the condensor to preheat the glycol before entering the reboiler. However, it also would have been obvious to one of ordinary skill in the art at the time the invention was made to recover heat from the only other heat source in the process, namely the vent stack, because recovering heat for use in a process that would otherwise be lost to the environment contributes to the efficiency of the process.

Claims 1, 5, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill '144 in view of Miles '523.

In column 2, lines 25-33 of Hill '144, glycol absorbent having absorbed hydrocarbons are passed to a reboiler. The vapors from the reboiler pass through a still and then to a condensor, where vapor volume is reduced by condensation (see column 2, lines 33-40). Condensed liquid and vapors is passed to reservoir 34. Vapors then proceed to two separators and then to a firetube inside a reboiler (see column 2, line 58 to column 3, line 15). Exhaust gas is passed to stack 23. Column 1, line 29 teaches that ethylbenzene, benzene, toluene, and xylene comprise much of the hydrocarbons. Hill '144 does not disclose placing a vaporizer to vaporize residual liquid in the vapors coming from the condensor, reservoir, and separators.

However, Miles '523 teaches in a similar process where contaminants and water are vaporized in a reboiler to subsequently be sent to an incinerator, directing the contaminants and water from the reboiler to a superheater (see column 4, lines 28-34). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to place a superheater (vaporizer) after the condensor, reservoir, and separators of Hill '144 because Miles'523 teaches that the superheater promotes oxidation and complete combustion of the vaporized mixture.

Although specific glycol compounds such as DEG, TEG, ethylene glycol, tetraethylene glycol, or glycerin are not taught by Hill '144, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose one of these absorbents for optimization of absorption properties and since they are commonly used in this process.

Claims 1, 5-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson '166 in view of Miles '523.

In column 8, lines 7-34 of Anderson '166, glycol absorbent having absorbed hydrocarbons are passed to a pressurized reboiler. The vapors from the pressurized reboiler pass through a still and then to a condensor, where some BTEX gases are condensed (see column 8, lines 20-22). Vapors and liquid are passed to a separator 237. Non–condensable vapors are then used to supply fuel for a burner used to heat an atmospheric reboiler (see column 8, lines 27-28). Column 5 line 27 teaches exhaust gases from the burner are vented to the atmosphere. Column 4, line 15 teaches that ethylbenzene, benzene, toluene, and xylene comprise much of the hydrocarbons. Anderson '166 does not disclose placing a vaporizer to vaporize residual liquid in the vapor stream coming from the separator.

However, Miles '523 teaches in a similar process where contaminants and water are vaporized in a reboiler to subsequently be sent to an incinerator, directing the contaminants and water from the reboiler to a superheater (see column 4, lines 28-34). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to place a superheater (vaporizer) after the separator of Anderson '166 because Miles'523 teaches that the superheater promotes oxidation and complete combustion of the vaporized mixture.

Although specific glycol compounds such as DEG, TEG, ethylene glycol, tetraethylene glycol, or glycerin are not taught by Anderson '166, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose one of these absorbents for optimization of absorption properties and since they are commonly used in this process.

In figure 7, heat exchanger 225 is used to pre-heat glycol before entering the pressurized reboiler using hot glycol from the atmospheric reboiler. However, it also would have been obvious to one of ordinary skill in the art at the time the invention was made to recover heat from the only other heat source in the process, namely the vent stack, because recovering heat for use in a process that would otherwise be lost to the environment contributes to the efficiency of the process.

Claims 2, 3, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi '981 in view of Miles '523 or Anderson '166 in view of Miles '523 as applied to claims 1, 5-8 and 10 above, and further in view of Tuckett '103.

The prior rejection of claims 1, 5-8 and 10 as being unpatentable over Choi '981 in view of Miles '523 or Anderson '166 in view of Miles '523 is applied herein.

None of the references teach specific glycol compounds used in the art to absorb water from the natural gas. However, Tuckett '103 teaches in column 1, lines 39-45 that diethylene glycol, triethylene glycol, and ethylene glycol are commonly used as desiccants to remove water from natural gas. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use these desiccants in the process of Choi '981 or Anderson '166 in view of Miles '523 because these are commonly known desiccants in the art for removing water from natural gas.

Claims 2, 3, and 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hill '144 in view of Miles '523 as applied to claims 1, 5, 6, 8, and 10 above, and further in view of Tuckett '103.

The prior rejection of claims 1, 5, 6, 8, and 10 as being unpatentable over Hill '144 in view of Miles '523 is applied herein.

None of the references teach specific glycol compounds used in the art to absorb water from the natural gas. However, Tuckett '103 teaches in column 1, lines 39-45 that diethylene glycol, triethylene glycol, and ethylene glycol are commonly used as desiccants to remove water from natural gas. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use these desiccants in the process of Hill '144 in view of Miles '523 because these are commonly known desiccants in the art for removing water from natural gas.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Choi '981 in view of Miles '523 or Anderson '166 in view of Miles '523 as applied to claims 1, 5-8 and 10 above, and further in view of Rhodes '675.

The prior rejection of claims 1, 5-8 and 10 as being unpatentable over Choi '981 in view of Miles '523 or Anderson '166 in view of Miles '523 is applied herein.

None of the references teach sparging the glycol in the reboiler with a stripping gas. However, Rhodes '675 teaches in column 4, lines 47-55 sparging glycol in a reboiler with a stripping gas. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to also include a sparger for introducing stripping gas into a reboiler because Rhodes '675 teaches this is effective removing residual water. It would have been obvious to one of ordinary skill in the art to do this because further removing water better prepares the glycol stream for recirculation back to an absorber for further absorbing hydrocarbons and water.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hill '144 in view of Miles '523 as applied to claims 1, 5, 6, 8, and 10 above, and further in view of Rhodes '675.

The prior rejection of claims 1, 5, 6, 8, and 10 as being unpatentable over Hill '144 in view of Miles '523 is applied herein.

None of the references teach sparging the glycol in the reboiler with a stripping gas. However, Rhodes '675 teaches in column 4, lines 47-55 sparging glycol in a reboiler with a stripping gas. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to also include a sparger for introducing stripping gas into a reboiler

because Rhodes '675 teaches this is effective removing residual water. It would have been obvious to one of ordinary skill in the art to do this because further removing water better prepares the glycol stream for recirculation back to an absorber for further absorbing hydrocarbons and water.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J Kuhar whose telephone number is 703-305-7095. The examiner can normally be reached on 8:45 am - 5:15 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stan Silverman can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

AK
July 25, 2003

STEVEN BOS
PRIMARY EXAMINER
GROUP 1100